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apparatus, is followed by the details of experiments with seventeen different plants, phanerogams and cryptogams, in various stages, seedlings, leafy twigs, inflorescences or entire plants, at various degrees of temperature and illumination. In the different experiments the ratio of the intramolecular to the normal respiration (*i. e.* I:-N) varies from 0.077 in young leafy twigs of *Abies excelsa*, to 1.197 in seedlings of *Vicia faba* at 23° C. The greater part of the paper is occupied by a discussion of these results and critical remarks upon the theoretical explanation of the phenomena of normal and intramolecular respiration.

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## NOTES AND NEWS.

DR. HENRY G. BULL, of Hereford, England, a mycologist, died October 31, 1885, at the age of 67.

DR. J. E. DUBY, the well-known mycologist, died at Geneva, Switzerland, November 24, 1885, 88 years old.

MILLSAUGH's third fascicle of American medicinal plants has appeared, containing 30 colored plates, with descriptive texts.

THE REPORT of the Forestry Commission of New Hampshire, 1885, is a hundred-page pamphlet containing much information regarding the forests of that state.

DR. J. H. OYSTER, of Paola, Kansas, has published a catalogue of North American plants, which seems to be well done, and is surely very useful as a check-list.

STATE AND PROVINCIAL LEGISLATION in the interests of horticulture and forestry is the title of a pamphlet of twenty-eight pages, by Charles W. Garfield, containing valuable information.

AN EXTENDED ACCOUNT of the American pear blight, written by Dr. J. H. Wakker, has been published in *Het Nederlandsche Tuinbouwblad*, a gardening journal of Holland, with a view to ascertaining if the disease is found in that country.

PROF. EDOUARD MORREN has distributed his address entitled "La sensibilité et la motilité des végétaux." It was delivered at a public meeting of the science class of the Royal Academy of Belgium, and is a delightful presentation of a very interesting subject.

AN ATLAS DES CHAMPIGNONS is being published by Octave Doin, of Paris, which gives the principal edible and poisonous mushrooms of France. The authors are MM. Richon and Roze. It is a large quarto with admirable colored plates, and is issued in fascicles at a reasonable price.

THE HERBARIUM of Columbia College, New York City, is being removed to the third floor of the library building. This will give many advantages, not the least of which will be a thorough protection against fire, the building being fire-proof. It will be several months before the work of removal is completed.

PROF. CHAS. E. BESSEY has been appointed State Botanist of Nebraska, and "the sum of twenty-five dollars, or so much thereof as may be necessary," was appropriated to pay the incidental expenses connected with the appointment. With such munificent appropriations it can not be long before the botany of this country is well worked up.

IN THE JOURNAL OF BOTANY for February, James Britten gives proofs to show that the genus *Brodiea* of Smith should bear an older name, *Hookera* of Salisbury. It is a tardy act of justice to Salisbury, and the case is so well presented that there seems to be no reason for not accepting the change. In that event our species may retain their specific names.

IN THE BULLETIN of the Royal Society of Belgium, Vol. xxiv, J. C. Lecoyer has published a monograph of the genus *Thalictrum*, with five plates representing the types of akenes. The genus numbers 79 species, of which we have about 10. The name *T. Cornuti* L. is suppressed, which brings up *T. corynellum* DC., but Dr. Gray claims that *T. polygamum* Muhl. is earliest and well enough defined to be distinguished from any other species. By Muhlenberg's name, therefore, this species will probably hereafter be known, at least among American botanists.

THE FITCHBURG (Mass.) High School, under direction of its science teacher, E. Adams Hartwell, has prepared a catalogue of the plants of Fitchburg and vicinity. It is published by the Agassiz Association of that place, and is well done. As is natural, the old names and order of sequence are used, but as the result of seven seasons' botanizing it is an excellent showing.

WE CLIP the following lines regarding Dr. Asa Gray from the Gardeners' Chronicle of February 6. They were called out by Professor Sargent's biographical sketch in the *New York Sun*: "English botanists claim Asa Gray as one of themselves, despite the accident of his birth on the other side of the Atlantic, and he is held in as great esteem here as in the land of his birth."

WINTER WEEDS is the subject of an illustrated article in *Vick's Monthly* for February, by Warren H. Manning. *Capsella Bursa-pastoris*, *Veronica peregrina*, *Linaria Canadensis*, *Lobelia inflata*, *Hypericum mutilum*, *Spergularia rubra*, *Malva rotundifolia* and *Stellaria media* are mentioned. Although most of them are usually classed as annuals, the power of young plants to endure the winter, and often to open the flowers whenever the weather is mild, makes them in effect biennials. They have sometimes been called winter annuals.

EDMOND LOUIS RENE TULASNE died at Hyères on the twenty-second of December last, at the age of seventy. Though he has done no scientific work for the past twenty years, his name is famous by reason of his classical researches upon various groups of fungi, especially the *Tuberaceæ*, *Tremellinæ*, *Nidulariæ*, and *Usiliaginæ*. His work upon the reproductive apparatus of lichens is likewise well known. He also published papers on various groups of Phanerogams, the most important of which is a Synopsis of *Podostemaceæ*. Much of his laborious research was shared by his brother, Ch. Tulasne, who died some years ago, their most celebrated joint work being *Selecta Fungorum Carpologia*.

PROF. J. C. ARTHUR has just distributed his annual report for 1885, as botanist of the New York Agricultural Experiment Station. The report shows great activity and, better than all, a desire to grapple with what are really living problems. The average reports from agricultural stations, containing the usual tables of very unimportant results from still more unimportant experiments, has brought considerable discredit upon this kind of work. This report deals chiefly with plant diseases, the topics presented being as follows: pear blight, spotting of quince fruit, rotting of tomatoes, rust and mildew of lettuce, rotting of cherries and plums, disease of clover-leaf weevil, weeds and their fungous parasites.

THE JOURNAL of the Elisha Mitchell Scientific Society for 1884-5 contains one hundred well printed pages of excellent scientific matter. This society draws its inspiration in part from the University of North Carolina, and its work does credit both to the society and to the university. The chief botanical articles are a sketch of the life of the Rev. M. A. Curtis by Dr. Thomas F. Wood and a list of additions to Curtis' catalogue of plants of North Carolina by M. E. Hyams. The latter is a list of about 150 species, without localities, and not including sedges or cryptogams. The sketch of Dr. Curtis is a scholarly presentation of the botanical labors of this eminent botanist, accompanied with a portrait. There are also notes on transpiration of plants, analysis of *Ilex* leaves, citric and malic acid in peanuts, cypress in North Carolina quaternary, twisting of the trunks and abnormal leaves of *Blephilia*, by Messrs. Venable, Schweinitz, Holmes and Hyams.

THE ANDEAN FLORA is the subject of a recent communication to the Linnean Society by John Ball. Dealing with the origin of the Andean flora, the author remarks that a quarter of the phanerogams of the region are *Compositæ*, probably the highest proportion known in any region, and that of these the most characteristic group is the *Mutisiaceæ*. Mr. Ball combats the idea of the recent origin of *Compositæ*, arguing their great antiquity from the variety of forms, the localization of some great groups, and the cosmopolitan dispersion of others. Allowing for all these a community of origin, or even several lines of descent, the results as seen to-day must have required an amount of time for their working out which could hardly be called even geologically recent. The relation of the Andean flora to the Rocky Mountains of North America, brought about by the mountainous connection through Central America and Mexico, is discussed. *Polemoniaceæ* and *Hydrophyllaceæ* are both noted as orders whose original home may be considered western North America, having feebly spread southward along the Andes. The order *Loasaceæ*, on the contrary, shows a South American origin.

AMANITINE and its antidote is the title of an article by C. Macilvaine in the *Journal of Mycology* for January and February, reprinted from the *Medical and Surgical Reporter*. This deadly alkaloid is confined to several species belonging to the *Amanita* group of mushrooms, as first pointed out by Julius A. Palmer, of Boston, in a communication to the *Moniteur Scientifique* in 1879. The alkaloid was isolated as early as 1868. This poison, when taken into the system, does not manifest itself till a lapse of eight to fifteen hours; one of the characteristic symptoms is a leaden or ash-colored hue of the skin. The one successful antidote is atropine. It had been tested upon the lower animals previous to the season of 1885, at which time it was first tried upon the human system in a case occurring in Pennsylvania from eating the poisonous *Amanita vernus*. It must be given under the direction of a physician. Polyporei, Boleti, Hydnei, Clavaria and Lycoperdons do not contain a poison, but may sometimes occasion disturbance of digestion by being too old, partly decayed, possessing an acrid or bitter principle, or from over-eating. In such cases the use of sweet oil and whisky, in equal proportions, is considered a sufficient remedy.

THE LITERATURE of 1885 is full of work on the respiration of plants. Two notable papers by MM. Bonnier and Mangin are added to their previous contributions in various French journals. The first of these, *Recherches sur les variations de la respiration avec le développement des plantes*,<sup>1</sup> is summarized by the authors as follows: 1, The ratio of the gaseous exchanges of respiration has not the same value at different stages of development. In general, it passes a minimum during the period of germination, and a maximum about the middle of the development, in an annual plant. For the long-lived plants, the ratio of O to CO<sub>2</sub> passes through the maxima (spring) and the minima (autumn) during the seasons of successive years. 2, The intensity of respiration varies with the development. Annual plants show one maximum during the germinating period and another at the time of flowering. Perennial plants also have two maxima, one at the time of unfolding of the buds and a second at the time of flowering. As a general thing, the species with persistent leaves have a respiratory intensity inferior to that of those with caducous leaves.

The second paper, *La fonction respiratoire chez les végétaux*,<sup>2</sup> is based upon all the previous work of the writers. From it the following general statements may be taken: 1, Within wide limits, for the same plant, at a given moment, the ratio of gaseous exchanges in respiration is independent of the partial pressures of the gases, the temperature and the illumination. 2, The ratio of gaseous exchanges varies with the development of the plant. 3, In a given time the intensity of respiration increases, more and more rapidly, with the temperature, and this increase is continuous and unlimited, even to the death of the plant. It also increases with the humidity of the air, and decreases with the illumination.

AN IMPORTANT and lengthy memoir, by J. Herail,<sup>3</sup> on the comparative anatomy of the stem of dicotyledons sets forth the present knowledge of the subject and adds materially to it. The length of the paper (over 100 pages) forbids a presentation here of more than the general conclusions of the author, which are as follows: 1. The unity of plan of the stem structure persists throughout all the modifications or variations to which this organ is subject. 2. The anomalies of structure are independent of the mode of life of the plant, and nothing is at present known of their causes. 3. Considering the modifications to which the histological structure of the elements of the various tissues are subject, it may be said: (a) that the composition of the wood is independent of the mode of life, but that, as a general fact, the diameter of the vessels is relatively greater in climbing and twining plants than in plants of ordinary habit; (b) that the liber escapes in great measure from this dependence, for, though certain twining and climbing plants have very large latticed vessels, others, growing under analogous conditions, have these vessels very small; (c) that the cortical portion (appareil tégumentaire) certainly varies least under the influence of the conditions of growth (provided it is considered from the same medium): the structure of this portion of the stem is generally identical in a given family and does not vary whether the plant is twining or erect.

<sup>1</sup>Ann. Sci. Nat., Bot., sér. vii, ii, p. 315-354.

<sup>2</sup>Ann. Sci. Nat., Bot., sér. vii, ii, 365-380.

<sup>3</sup>Recherches sur l'anatomie comparée de la tige des dicotylédones: Ann. Sci. Nat., Bot., sér. vii, ii, p. 201-314. 6 plates.